distal end of the outer barrel to induce a micro-emergence of blood at the dermal tissue surface,

and wherein, the hydrophilic absorptive wick is configured to draw at least a portion of blood from the micro-emergence into outer barrel through the aperture by capillary action.

15. A device comprising:

a negative-pressure barrel having an aperture opening at a distal end and a housing affixed to a proximal end;

an accelerator barrel positioned lengthwise within the negative-pressure barrel with an open proximal end fixed to the housing and opening into a chamber within the housing, and having an open distal end proximate to, and aligned with, the aperture;

a high-pressure gas source configured for filling the chamber with pressurized gas;

a trigger valve situated between the chamber and the open proximal end of the accelerator barrel, the trigger valve having a closed operational state in which the trigger valve is closed so as to form a hydrostatic boundary between the chamber and the open proximal end of the accelerator barrel, and an open operational state in which the trigger valve is opened so as to remove the hydrostatic boundary;

an arming actuator configured for setting the device in an armed operational state in which (i) the trigger valve is set in the closed operational state, (ii) the chamber is filled with pressurized gas, (iii) a micro-particle is positioned within the accelerator barrel at a launch point proximate to the trigger valve, (iv) a negative-pressure vacuum is created within the negative-pressure barrel and within the accelerator barrel between the open distal end and the closed trigger valve, and (v) an aperture membrane is configured to seal the aperture and maintain the negative-pressure vacuum; and

a trigger-valve release actuator configured for causing the trigger valve to abruptly transition from the closed operational state to the open operational state, thereby abruptly releasing the pressurized gas from the chamber into the open proximal end of the accelerator barrel,

wherein, the abruptly released pressurized gas is configured to accelerate the micro-particle from the launch point to the open distal end of the accelerator barrel and through the aperture with sufficient momentum to pierce through the aperture membrane and penetrate a sufficient depth of dermal tissue proximate to the distal end of the negative-pressure barrel to induce a micro-emergence of blood at the dermal tissue surface,

and wherein, the negative-pressure vacuum within the negative-pressure barrel is configured to draw at least a portion of blood from the micro-emergence into the negative-pressure barrel through the pierced aperture membrane.

16. The device of claim **15**, wherein the high-pressure gas source is selected from a list consisting of a container of compressed gas, a chemically-reactive gas pressure generator apparatus, an electro-chemical gas pressure generator apparatus, and a mechanical pressure generator.

17. The device of claim **15**, wherein the accelerator barrel comprises an inner cylindrical channel having a constant interior cross-sectional shape between the launch point and the open distal end,

and wherein the micro-particle has an exterior cross-sectional shape configured to be a flush fit to the constant interior cross-sectional shape of channel and at the same time not impede free longitudinal motion of the micro-particle through the channel.

18. The device of claim **17**, wherein the interior cross-sectional shape of the inner cylindrical channel is circular and the exterior cross-sectional shape of the micro-particle is substantially circular.

19. The device of claim **17**, wherein the inner cylindrical channel comprises a nozzle segment situated between the launch point and the trigger valve, the nozzle segment being configured to cause the abruptly released pressurized gas entering from the chamber to exit the nozzle segment toward the micro-particle as a supersonic flow.

20. The device of claim **17**, wherein the inner cylindrical channel comprises a taper segment situated between the launch point and the trigger valve, the taper segment forming a backstop configured to prevent motion of the micro-particle from the launch point toward the trigger valve.

21. The device of claim **17**, wherein the trigger valve comprises a trigger barrier configured to form a hydrostatic seal between the chamber and the open proximal end of the accelerator barrel when the trigger valve is set in the closed operational state,

and wherein the trigger-valve release actuator comprises a rupture actuator configured for abruptly rupturing the trigger barrier to abruptly break the hydrostatic seal.

22. The device of claim **21**, wherein the arming actuator is further configured for reconfiguring a replacement trigger barrier to set the trigger valve in the closed operational state for each of two or more separate instances of the arming actuator setting the device in the armed operational state.

23. The device of claim **15**, further comprising a metering valve configured for controlling separate refill allocations of pressurized gas from the high-pressure gas source to fill the chamber for each of two or more separate instances of the arming actuator setting the device in the armed operational state.

24. The device of claim **15**, wherein the dermal tissue surface serves as the aperture membrane by placement of the aperture in direct contact against the dermal tissue surface.

25. The device of claim **15**, further comprising a reservoir at the distal end of the negative-pressure barrel configured for collecting and holding the at least a portion of blood drawn.

26. The device of claim **14**, wherein the micro-particle comprises a micro-droplet of liquid.

27. The device of claim **14**, wherein the micro-particle comprises a medically therapeutic substance.

28. A method comprising:

evacuating a negative-pressure barrel of a device, the evacuated negative-pressure barrel having an aperture membrane sealing an aperture at a distal end of the negative-pressure barrel, and a housing affixed to, and sealing, a proximal end of the negative-pressure barrel, wherein the negative-pressure barrel contains an accelerator barrel positioned lengthwise within the negative-pressure barrel with an open proximal end fixed to the housing and opening into a chamber within the housing, and having an open distal end proximate to, and aligned with, the aperture;

arming a trigger valve situated between the chamber and the open proximal end of the accelerator barrel, the armed trigger valve forming a hydrostatic boundary between chamber and the open proximal end of the accelerator barrel;